

NASA FY 2001 Performance Plan

Background and Introduction

The Government Performance and Results Act

The Government Performance and Results Act (GPRA) was passed by Congress and signed by the President in 1993. GPRA was enacted to improve the efficiency of all Federal agencies, with the following specific goals:

Improve Federal program management, effectiveness, and public accountability
Improve congressional decisionmaking on where to commit the Nation's financial and human resources
Improve citizen confidence in Government performance

The Act directs Executive Branch agencies to develop a customer-focused strategic plan that aligns activities with concrete missions and goals. The first strategic plans were to be submitted in September 1998 as part of the Fiscal Year 1999 (FY 1999) budget process. The budget submissions were to support the goals expressed in the agency strategic plans. The Act also directs agencies to manage and measure results to justify Congressional appropriations and authorizations. Six months after the completion of the fiscal year, agencies will report on the degree of success in achieving the goals and evaluation measures defined in the strategic and performance plans. The first such report will be furnished to the Congress in March 2000, covering the performance in FY 1999.

NASA's Strategic Management System

Processes within NASA's Strategic Management System provide the information and results for GPRA's planning and reporting requirements. The System is defined in the NASA Strategic Management Handbook (NASA Procedures and Guidelines 1000.2). Figure 1 illustrates the hierarchy of documentation for the Strategic Management System.

The NASA Strategic Plan (NASA Policy Directive 1000.1) defines the vision, mission, and fundamental questions of science and research that provide the foundation of the Agency's goals. The Plan describes four Strategic Enterprises that manage the programs and activities to implement our mission, answer the fundamental questions, and provide service to identified customers. These Strategic Enterprises are *the Space Science Enterprise, the Earth Science Enterprise, the Human Exploration and Development of Space Enterprise, and the Aero-Space Technology Enterprise*. The support systems for the Strategic Enterprises, defined as Crosscutting Processes, are also defined in the Strategic Plan. These Crosscutting Processes are *Manage Strategically, Provide Aerospace Products and Capabilities, Generate Knowledge, and Communicate Knowledge*.

Interested readers may access these Strategic Management System documents through the Internet.

It should also be noted that the Final FY 2001 Performance Plan reflects the Strategic Plan in force at the time the President's Budget was released. NASA is currently working on the next Strategic Plan, due to be released in September 2000.

In the NASA Strategic Plan, the vision and mission statements of the Agency are articulated. We reprint them here for the convenience of the reader.

NASA Vision Statement

NASA is an investment in America's future. As explorers, pioneers, and innovators, we boldly expand frontiers in air and space to inspire and serve America and to benefit the quality of life on Earth.

NASA Mission Statement

- ***To advance and communicate scientific knowledge and understanding of the Earth, the solar system, and the universe and use the environment of space for research;***
- ***To advance human exploration, use, and development of space;***
- ***To research, develop, verify, and transfer advanced aeronautics, space, and related technologies.***

Outcomes of NASA's Activities

Government investment decisions on funding for space and aeronautics research and technology cannot be made knowing in advance the full benefits ("outcomes") that will accrue from making the investments. Nor, can the timetable be known as to when these benefits will be realized. However, we can identify how the outcomes of NASA's activities contribute significantly to the achievement of America's goals in four key areas:

Economic growth and security – NASA conducts aeronautics and space research and develops technology in partnership with industry, academia, and other federal agencies to keep America capable and competitive.

Educational Excellence – NASA involves the educational community in our endeavors to inspire America's students, create learning opportunities, and enlighten inquisitive minds.

Peaceful Exploration and Discovery – NASA explores the Universe to enrich human life by stimulating intellectual curiosity, opening new worlds of opportunity, and uniting nations of the world in this quest.

Preserving the Environment – NASA studies the Earth as a planet and as a system to understand global climate change, enabling the world to address environmental issues.

Performance targets supporting the first three outcomes can be found in all of the Enterprises and Crosscutting Processes. Performance targets supporting the preservation of the environment can be found in the Earth Science Enterprise.

NASA's Fiscal Year 2001 Budget

The NASA FY01 budget request (Figure 3) reaffirms the President's commitment to support NASA's space and aeronautics program. This budget will support the Agency's priorities as directed by the National Space Policy and the President's Goals for a National Partnership in Aeronautics Research and Technology. NASA's priorities include a commitment to safety for human aeronautics and space flight, the assembly of the International Space Station, and the development of the Next Generation Launch Vehicle. The budget also provides support for an aggressive space science program, a program of long-term observation, research and analysis of Earth from space and revolutionary advancements that will sustain global U.S. leadership in civil aeronautics and space.

The successful execution of NASA's strategic goals and objectives is contingent on receipt of the requested appropriations, as well as the provision of funds, materials, or services which have been committed to the cooperative agreements or partnerships that are referenced in this document. The parties to these agreements include: foreign governments, other Federal Agencies or Departments, and commercial entities.

Fiscal Year 2001 Estimates (In millions of Real Year Dollars)

	<u>FY1999</u>	<u>FY2000</u>	<u>FY2001</u>	<u>FY2002</u>	<u>FY2003</u>	<u>FY2004</u>	<u>FY2005</u>
<u>NASA Total Budget \$M</u>	<u>13,653</u>	<u>13,601</u>	<u>14,035</u>	<u>14,465</u>	<u>14,769</u>	<u>15,305</u>	<u>15,570</u>
Space Science	2,119	2,193	2,399	2,606	2,961	3,299	3,578
Earth Science	1,414	1,443	1,406	1,333	1,293	1,303	1,306
Human Exploration & Development of Space*	6,309	6,238	6,332	6,189	5,629	5,442	5,313
Aero Space Transportation Technology	1,339	1,125	1,193	1,549	1,949	2,245	2,303
Mission Support/IG Other	2,472	2,601	2,706	2,789	2,936	3,017	3,071
Civil Service FTEs	18,469	18,623	18,954	18,970	18,971	18,777	18,562

The Mission Support line includes the indirect cost of operating the NASA institution, including personnel providing direct and indirect support.

Under the FY2001 submission structure, the cost of Full Time Equivalents and related travel directly supporting the Projects and Programs of the various Enterprises are displayed in the Mission Support account. As NASA moves into the era of full cost management, the budget for the Mission Support and Other elements will be directly allocated to the programs and projects.

For informational purposes, the Enterprise sections of this plan will display the Civil Service staffing levels assigned to the Enterprise. There are also tables in each of the sections that provide the reader with a crosswalk between the performance targets,

the strategic objectives and the appropriate budget line item.

Additional detail on the means and strategies for accomplishing these performance targets is included in the budget narrative sections of this document. The NASA FY01 Budget is also available through the NASA homepage at the following internet address:
<http://ifmp.nasa.gov/codeb/budget2001/>

NASA Performance Plan

This document, as required by GPRA, describes performance measures and service levels for program activities requested in the FY01 budget. Performance goals and objectives are defined for NASA's Strategic Enterprises and for Crosscutting Processes in the NASA Strategic Plan, with 1999 Interim Adjustments (NPD 1000.1).

NASA has instituted several major changes with the FY01 Performance Plan. NASA has revised its approach to the development of performance targets. The targets contained in the FY01 Performance Plan have been developed to enable a better understanding of how the specific measures of output (indicators) contribute to the eventual outcomes that are the result of a number of years of research, development, and data analysis. The performance targets in the FY01 Performance Plan have been developed specifically to enable us to display indicators from multiple years which will contribute to the achievement of the summary targets. This change in format will ultimately allow a more concise representation of the agency's performance that will more readily span multiple years and enable decisionmaking of the type intended by the authors of GPRA. NASA believes that this process improvement will better serve the needs of the public, our governmental customers and agency management.

This plan thus represents a transition which must bridge the distance between the previous approach and the future more concise representation. Performance targets from previous performance plans more closely approximate the indicators in the FY01 Performance Plan. The Indicators supporting each of the performance targets are identified in an appendix to this plan.

Following the narrative sections, each Enterprise or Crosscutting Process will include the following displays:

- A table which relates the Strategic Goals, Strategic Objectives, and FY01 Performance Targets. The types of indicators being used to evaluate performance against those targets are characterized in the final column.
- A table which recaps the relationship of budget account, target, and performance indicators.

To facilitate configuration management, control numbers have been assigned to all performance targets. The numbering sequences may not be contiguous, as targets may have been dropped out as the formulation process progressed.

The Performance Evaluation Process

NASA uses a process of extensive internal and external reviews to evaluate our progress against established plans.

Internally, there are standard monthly and quarterly project and program level reviews at the NASA field installations, at contractor installations, and at NASA Headquarters. There are regular reviews for functional management activities, such as procurement, finance, facilities, personnel, information resources management, etc. There are reviews of science, engineering, and technology plans and performance. The NASA Inspector General conducts independent reviews and provides recommendations for corrective actions.

NASA has established management councils, as described in the NASA Strategic Management Handbook, that conduct internal oversight reviews. Throughout the year, Program Management Councils (PMCs) at Headquarters and the Centers assess program schedules, cost, and technical performance against established programmatic commitments. The Senior Management Council (SMC) brings together both Headquarters and Field Installation Directors to conduct assessment review twice a year of the progress being made in meeting the Enterprise and Crosscutting Process performance targets.

NASA's extant management review processes provide appropriate forums for internal reporting and reviewing of project and program performance data. The recent streamlining of agency processes provides confidence that new data collection and oversight processes need not be created for compliance with GPRA. Our mission oriented organizational structure and established management processes are well suited to assessment of this type of performance evaluation.

There are also significant external review processes in place. The external reviews typically begin with the peer review processes in which NASA uses panels of outside scientific experts to ensure that science research proposals are selected strictly on the merits of the planned research. This process takes into account past performance for selection and/or continued funding.

External reviews of agency performance are conducted by a number of organizations. An independent accounting firm annually audits NASA's financial statements, including program and functional performance parameters, which leads to the publication of the *Accountability Report*. NASA requests assistance from other federal agencies to provide expert advice and council. In some cases, the organizations are advisory bodies of experts from the public and private sectors that work with NASA to establish priorities in particular scientific disciplines. In other cases, reviews are conducted by organizations such as the NASA Advisory Council, the Aerospace Safety Advisory Panel, the National Academy of Sciences, and the General Accounting Office, which share responsibility for oversight of the Agency. The Occupational Safety and Health Administration and the Environmental Protection Agency will also provide reviews of performance unique to their agencies during the fiscal year.

The use of these external reviews allows NASA to receive a report card on whether we are making the anticipated progress towards accomplishing the priorities established by the Administration, the Congress, and our advisory bodies. When necessary, these external assessments result in the revision of either implementation plans or strategic plans.

The GPRA Performance Evaluation and Report Process

For the purposes of the GPRA performance reporting process, NASA intends to use NASA's advisory committees as the critical input. These committees already opine on NASA's Strategic Plan, individual Enterprise Strategic Plans, and budgetary priorities. NASA furnishes program performance status information, and in turn, the committees render advice and council. It is this process that NASA will employ to generate an independent "scorecard" report on our annual performance.

NASA has historically been one of the most open federal agencies in terms of performance measurements. Public attention is drawn quickly to program successes, and particularly to program failures. Press conferences on the scientific results and program technical status are commonplace. The technical measurement of program progress is a management imperative due to the heavy emphasis on development programs, and within the programs, the specific projects. Flight programs such as the International Space Station compile thousands of technical performance metrics, schedule milestones, and cost performance data.

However, the GPRA requires a heavier focus on outcome metrics rather than NASA's ubiquitous input and output metrics. Like other federal agencies engaged in science and technology, NASA has difficulty in quantifying outcomes and, especially, relating current outcomes to current fiscal expenditures. This is particularly the case since NASA development programs are multi-year in character. In some cases, the past expenditures began more than a decade ago, such as the Hubble Space Telescope that entered into development in the mid-1970's. More recently, NASA has focussed on programs and projects with much shorter development periods, on the order of 3-5 years. Yet, the science outcomes are dependent on scientists analyzing the information gathered in the years after launch.

The stated objectives of programs within NASA's Enterprises are long-term in character. This is exemplified by considering a Space Science performance objective, "Solve the mysteries of the universe." Annual performance evaluations assess whether appropriate progress is being made, perhaps actually solving individual "mysteries" to the satisfaction of the scientific community, or providing additional insights to the eventual solution of other mysteries. The assessment process requires a multifaceted judgement which takes into account the nature of the challenge of "solving the mystery," the level of resources available to be applied, and the actual scientific achievements of the past year.

It is particularly important in our view to avoid evaluating actual output performance in R&D organizations solely by counting the number of planned events for the year with the number that actually occurred. The "beancount" approach is more appropriate to a known manufacturing environment. In the high-performance, high-risk R&D environment that characterizes NASA's programs, it is inadvisable to incentivize on-time performance and thereby de-emphasize safety, quality, high performance and appropriate risk-taking.

NASA has worked hard to maintain the highest emphasis on maintaining safety; this value applies not only to safety of personnel but also to preservation of high value facilities, equipment, experimental hardware, and related capabilities. Quality goes hand-in-hand with safety, but extends well beyond it. For example, taking credit for completing a critical design review (CDR) for a spacecraft is only appropriate when the CDR process has been thorough, complete, and meets performance standards. Great care must be taken that quality does not suffer when contract fee incentives call for a milestone payment upon completion of the CDR. Other examples abound, and give rise to our constant vigilance to avoid rushing to launch in order to achieve a given date.

It is possible, of course, to emphasize safety and quality and achieve little of lasting significance or have the achievement take an inordinate amount of time. Building spacecraft that do not test new designs, but rely only on proven designs, is appropriate for operational, mission agencies or commercial entities. It is not appropriate for an R&D environment. Conducting basic and applied research involves experimentation. Exploration of new methods and new technologies in these high-performance ventures, it is acceptable to take risks, to push the envelope, to fail. The tolerance of failure puts NASA and other R&D agencies into a different category than other federal agencies involved in the delivery of services to the public. Note, however, that this does not translate into an acceptance of failures that result from taking an inappropriate level of risk. The level of appropriate risk is tailored to the environment. The distinction is critical, particularly in high-value, high-cost environments, such as human space flight, the maintenance of the Hubble Space Telescope, and the launch of the Cassini spacecraft. The risk of failure in those venues is limited by all practicable means.

Thus, output measures are best used in suitable context. For these reasons, NASA management encourages Space Shuttle program managers to shunt aside metrics dealing with launches planned vs. launches achieved during a given fiscal year. If by waiting, one less launch is achieved than planned, but the result is better safety or quality or enables improved performance or reduces risk, then the latter result is what NASA wants to incentivize.

We have met with little success in past efforts to marry conventional output measures to these other parameters to derive a quantitative performance metric. Instead, we have determined that asking independent experts to review both quantitative and qualitative measures and to come up with an integrated score is a better approach.

For the purpose of assessing NASA's overall performance, we will continue to ask our Advisory Committees to evaluate accomplishments at the level of the Enterprise and Crosscutting Process objectives, integrating not only quantitative output measures but also balancing these in the context of safety, quality, high performance, and appropriate risk. The Advisory Committees will be asked to assign a rating of "red, yellow, or green" to measure the progress made against each of the objectives, and provide a narrative explanation. These objectives are identified in the Strategic Plan and repeated in the display of Strategic Goals and Strategic Objectives.